DOCUMENT RESUME

ED 192 435 EA 012 907

AUTHOR Hempel, Marvin W.
TITLE Individualized Instruction--Theoretical Parameters and Pragmatic Applications.
PUB DATE 6 Jul 80
NOTE 53p.: Paper presented at the Annual Summer Conference of the American Association of School Administrators (3rd, Chicago, IL, July 6-9, 1980). Some pages may not reproduce clearly due to broken print of original document.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Business Education; *Cost Effectiveness; *Individualized Instruction; *Instructional Innovation; Learning Laboratories; Program Administration; *Program Implementation; Secondary Education; Teacher Effectiveness
IDENTIFIERS *Centennial High School OR

ABSTRACT

This document describes a practical method for implementing individualized instruction in the secondary school. The first section of the document distinguishes between mistaken notions and fears concerning individualized instruction and the characteristics of a true individualized instruction program. Part 2 describes the author's experience with the planning, implementation, and management of a model individualized instruction program in the Business Education area at Centennial High School in Gresham, Oregon, during the 1976-77 school year. A cost analysis of this model, revealing a 33 per cent cost savings, forms the third part of the document. Included is a cost analysis of a "typical" school considering individualized instruction, a cost justification, and procedures for analyzing purchasing needs. The fourth section discusses application of individualized instructional techniques to other academic areas. Conclusions and recommendations fill out the fifth and final section. Samples of materials used in the Centennial program are appended. (Author/PGD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Individualized

Instruction: Theoretical Perspectives

And Pragmatic Applications

ED192435

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M. W. Hempel

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Marvin W. Hempel, Administrative Assistant to the Superintendent of Centennial School District, is an author, educational consultant, and business educator. His is the author of several nationally distributed individualized business education programs for high schools, colleges, industries, and government agencies. He also has authored several textbooks, as well as quest articles for professional journals relating to individualized learning and business education.

A teacher and administrator for the past nineteen years, Mr. Hempel has devoted most of his professional efforts to individualized learning and to developing and coordinating programs that help bring the realities and challenges of the business world into the classrooms--at all levels of education.

In addition to his administrative responsibilities, Mr. Hempel has been active as an educational consultant to many school districts in providing in-service training to teachers who are implementing the "Business Learning Center" concept in their schools and training faculty.

TABLE OF CONTENTS

INTRODUCTION 1

Basic Advantages
Three Major Goals
Quality of Instruction
Teacher and Student Productivity
Instructional Cost
Summary

1. THE CONCEPT OF INDIVIDUALIZED INSTRUCTION . . . 6

Five Teacher Fears
What Truly Individualized Instruction IS NOT
What is Truly Individualized Instruction
Synergistic Learning System
Summary

II. METHODOLOGY AND THE CENTENNIAL MODEL 13

The Learning Center Concept
Centennial High School Model
Role of the Teacher
Facilities, Equipment, and Software
Flexible Scheduling
Adult and Student Aides
Student Course Guides
Getting 1. 1. Started--Days 1 to 5
Variable Credit
Grading System
Student Records
Teacher Load
Student/Classroom "Problems"
Exhibits

III. COST ANALYSIS OF INDIVIDUALIZED INSTRUCTION. . . 27

Fred Manasse Report
Cost Analysis
Cost Justification
Estimating Initial Cost of 1.1. Program

IV. APPLICATION OF INDDIVIDUALIZED INSTRUCTION . . . 34
TO OTHER ACADEMIC AREAS

Complete 1.1. Programs
Academic Areas
Learning Centers

INTRODUCTION

During recent years, much has been said - and rightly so - concerning the dramatic implementation of Individualized Instruction into educational programs offered at all levels of education. The inherent advantages of Individualized Instruction (I.I.) have been a compelling factor in attracting the attention of administrators, school board members, educators, and citizens at an ever-increasing pace! Primarily, Individualized Instruction offers these basic advantages:

For the Student - greater retention and comprehension; the opportunity to progress at one's own rate (in line with individual ability and motivation); more personal responsibility for learning; an opportunity to work on a one-to-one basis with the teacher; a chance to ask questions without being subjected to possible embarrassment and ridicule; discussion sessions in which the learner sets "goals" cooperatively with the teacher; and the privilege of starting a subject at any time.

For the Teacher - relief from being a "repeater" of facts, figures, and concepts; an opportunity to function as a manager of learning environments, a technician/counselor of study systems, a diagnostician of student needs; more time to better understand individual students and their respective requirements for special assistance; additional time in which to research helpful ideas and materials for both superior and less capable students; relief from the problems created by student absenteeism; convenient scheduling of late registrants; easy determination of day-by-day progress; and increased productivity.

For the Administrator - true "open-entry"/"open-exit" registration; far greater flexibility in curricular offerings; significantly reduced instructional

costs; fewer complications in scheduling; and easier granting of "variable" credit.

For the Taxpayer - dramatically greater returns for the educational tax dollar; more effective use of time, space, equipment, and personnel; a possible 30 - 40% reduction in cost of instruction; and the very significant reduction in taxes that therefore could be effected.

Individualized Instruction focuses at three major goals while, at the same time, attempts to accomplish the above advantages. Basically, Individualized Instruction (I.I.) is implemented to improve the quality of instruction, increase teacher (and student) productivity, and to demonstrate cost effectiveness, thereby reducing the dollar cost of instruction.

Perhaps when studying the benefits of Individualized Instruction one should keep the following points in mind:

> *Dr. Benjamin Bloom of the University of Chicago states that "students differ in the rate at which they can learn - not in the level in which they can achieve or in their basic capacity to learn . . . studies in which these ideas have been applied to actual school subjects reveal that as many as 90 per cent of the students can learn these school subjects up to the same standard that only the top 10 per cent of students have been learning under usual conditions."[1]

> *There has been a growing concern with management and productivity studies in education. These studies show that the productivity of education is much too low, even for the richest nation in the world. In his book, The Age of Discontinuity, Peter Drucker describes it this way:

> "Teaching is where agriculture was around 1750, when it took some 20 men on the farm to feed one non-farmer in the town. We have to make the teacher more productive, have to multiply his or her impact, have to increase greatly the harvest from his or her skill, knowledge, dedication, and effort." [2]

*Educational Consultant and Educational Engineer Fred Manasse estimates at least $250,000 a day is spent needlessly on education in the United States, while costs, on a national basis have risen 138 per cent per student and in Oregon the increase is 93 per cent.[3]

*In a study entitled An Empirical Study To Aid In Formulating Educational Goals, released by the American Institute for Research, it was revealed through an extensive interview process with 1,000 of the nation's 30-year olds that five serious deficiencies exist in today's public schools: inadequate vocational guidance, uneven quality of teaching, lack of individualized instruction, inappropriate curriculum, and insufficient counseling. In fact, the experiences of 65 per cent of the young adults indicate that their education would have been improved by an individualized approach.[4]

*Psychologists have been telling us (for at least 30 to 40 years) that lecturing to groups of people is a most inefficient, costly, and ineffective means of communicating. Indeed, some studies show that, when subjected to the lecture system, less than 30 per cent of what we hear is retained--with still other studies showing less than 11 per cent.[5]

*Dean Theodore Sizer of the Harvard Graduate School of Education states that "as a group, educationists are "anti-conceptual", asserting practices from personal experience rather than from theory and systematic evidence. Few teachers can explain why they are doing what they are doing, what are its roots in some theory of learning or of culture or of pedagogy."[6]

These, of course, are only a few of a combination of factors and concerns that are challenging our schools at all levels. Perhaps it can be said that the best research in the world is worthless, if the people who need to know about it, don't know; or knowing, don't care; or caring, don't know how to apply that which they know.

Perhaps it is this point that educational research breaks down: Only a fraction of that which we have learned finds its way into classroom methodology. The existence of information in scholarly periodicals is not the same as its pragmatic application.

In short, what is being said is this: Equally important as research--if not more important--is the collection, dissemination, and assisted application

of proven methods, techniques, systems, materials--and statistical studies.

This Bulletin, then, is focused at carrying out this objective. Its purpose is to provide a practical approach to implementing Individualized Instruction in our public schools, regardless of size. (Perhaps there is no other effective way for small schools to offer a broad, comprehensive, cost effective curriculum). Basically, low retention, low comprehension, low productivity, greatly increasing costs, lack of cost effectiveness, and the minimal implementation of educational (and related) research findings on the part of our schools have been compelling reasons why certain school boards, administrators, educators, and taxpaying citizens have been turning to Individualized Instruction as an effort to bring a new and practical system of instruction (and learning) to the classroom.

Because of the numerous interpretations of Individualized Instruction which are wrong or misleading, Part I of this Bulletin presents a comprehensive and careful discussion about what is "truly" Individualized Instruction. This section relates to a list of five "fears" of Individualized Instruction often attributed to reluctant teachers, who choose not to "get involved" in this new concept. This same section discusses what "truly" Individualized Instruction is not before clarifying the complete meaning of what is termed "truly" Individualized Instruction.

Part II is a practical, "living" example of an I.I. model, based on the author's experience at Centennial High School, in Gresham, Oregon. This section will explain "how to do it!" Based on the finding at the Centennial Demonstration Model, virtually every phase of organizing, implementing, and managing a true I.I. program is outlined, including statistical evidence of student achievement and attitudinal acceptance. This section will describe how the Centennial I.I. Demonstration Model serviced 640 students through seven separate programs during the 1976-77 school year.

Part III reveals a complete cost analysis of the Centennial Model by "outside" educational consultant Fred Manasse. In his study, Mr. Manasse found that the Centennial Model effected a 33% cost savings to the Gresham Union High School District during the 1975-76 school year, while, at the same time, expanding the individualized course offerings to 475 high school students. Moreover, a complete cost analysis of a "typical" school contemplating the adoption of a truly Individualized Instruction approach, a cost justification, and procedures on analyzing purchasing needs concludes this part of this report.

Part IV reviews the many applications of I.I. to virtually all academic areas. Since the I.I. Model described in Part II is restricted to Business Education programs, this section relates to the adaptation of other academic programs to the implementation of I.I.

Part V is a synthesis of the conclusion of the author based on the content of the first four parts. Conclusions on this project should not be made without a summary of recommendations for future action. For this reason, the author, through extensive research and pragmatic experience, concludes this Bulletin by presenting numerous and important recommendations with the full expectation that I.I. can continue to assist all of education in meeting the challenges of improving the quality of instruction, increasing student and teacher productivity, and reducing the cost of instruction by becoming cost effective.

I. THE CONCEPT OF INDIVIDUALIZED INSTRUCTION

For many, many years we have known that human beings do not learn at the same rate! Differing mental abilities and interests just make this a foregone fact. However, in the past, we have tried "fads" and "gadgets" which have been, in some cases, somewhat helpful in stimulating students to make a greater effort to learn, but still we handled each class as a unit--hoping that in some way all students would reach certain predetermined objectives at the end of a specific period of time. And during recent years frequent references have been made regarding to the "coming of" and the "need for" I.I.. However, there still exists some resistance, on the part of educators, to the attempt to implement I.I. into the classroom. Some basic reasons why some educators resist the change to I.I. include:

1. Fear that it may cost them their jobs;
2. Fear of equipment--especially electronic equipment;
3. Fear of confronting students on a strictly one-to-one or individual basis;
4. Fear of losing the "DMZ Zone" between their desks and the class as a whole;
5. Fear of "Giving up the Stage" or "Limelight".

Perhaps the lecture method or "format" is more of a tribute to the "ego" of the teacher--it does not guarantee listening or learning. On the other hand, it has been extremely encouraging to realize that within the last few years--and particularly within the last two years, teachers are much more receptive to the Individualized Learning concept. (In fact, at the Centennial High School Model, more than 300 educators and guests have visited the I.I. program to learn more about its organization and achievements. The concept, however still is not clearly understood by many. It is important to indicate what truly Individualized Instruction (T.I.I.) is not:

WHAT TRULY INDIVIDUALIZED INSTRUCTION IS NOT!

1. TII is not brought about by reducing the number of students in the class, with the objective that the individual student can be given more individual time by the teacher. The teacher still is the source of repetitious information, in spite of the fact that the instructor might have few students for whom he or she must serve as the "fountain of factual information". The big deterrent to this instructional format is the tremendous "per student cost" of instruction. There is little doubt but that teachers are going to have to handle larger numbers of students in the future in order to reduce over-all instructional costs. Furthermore, if classes are going to be larger, not smaller, and we are moving more to individualizing instruction-then, we are going to have to do something about helping the teacher in a practical and effective way to enable every student to learn at their own intellectual pace.

2. TII does not mean saying to students, "Here are the textbooks and/or workbook: you may work just as rapidly as you wish, everyone at his own pace." Of course, this procedure has been around for many, many years.

The teacher still has to fill in all the gaps when using this procedure . . . in a repetitious and time-consuming manner. The teacher must provide the same types of information to student after student because the learner has to be dependent on his ability to read and interpret the textbook and/or workbook. Much student "down time" results as individuals wait for the teacher to become available.

3. TII is not achieved by the development of "packets" which have been characterized as "lesson plans" for the student. Actually, packets were a move in the right direction years ago when they hit the educational world in "flood-like" proportions. Learning packets, then, were an early step in the developmental and experimental stages of I.I.

The effectiveness of packets is dependant, mostly, upon the ability of the student to read. As a result of this inherent negative characteristic, and because great strides have been made in the development of "unsophisticated" electronic devices, the audio and the printed word have been combined to greatly enhance the students opportunity to learn.

4. TII does not come about automatically by providing teachers with voluminous reference materials, suggestions for subject content, course outlines, courses of study, interpretation of such terms as clusters (including outlines), career education, career awareness, behavioral objectives and others.

These ideas and activities offer an important role in the over-all educational pattern, but do little to assist the teacher to provide I.I. in the classroom. Unless we really provide the teacher with the instructional necessities for the students on an individualized basis, or provide teachers with the know-how and time to really prepare individualized materials and then provide the supportive equipment suited to the truly individualized learning - we are asking the impossible of full-time teachers to make the change to the individualized concept.

5. TII does not mean making the teaching/learning process more complex in order to lend prestige to the concept. Actually, the opposite should be the case. Every possible effort should be made to make it feasible for both teacher and student to place major emphasis on teaching and learning, rather than on devoting time and effort to the operation of complicated "gadgetry". To my knowledge, no studies have shown that learning from sophisticated and expensive devices is superior to that learning from less sophisticated (and less expensive) and well prepared instructional hardware.

6. TII is not a concept that lessens the importance of the teacher. Actually, the exact opposite is true; the teacher's role is even more meaningful. Now, teaching/learning becomes a one-to-one process. A "manager/clinician" is another way to characterize the teacher who uses the TII concept.

7. TII does not mean the complete absence of group interaction. It does mean, however, that when the teacher and/or students feel the need for a group meeting, such interaction can become more meaningful and effective - not routinized just because it is "in the schedule" at a particular time.

8. TII is not just the responsibility of the teaching staff. It is a concept not to be legislated by school administration, but a responsibility of the latter to create, through sound educational procedure, an educational atmosphere and know-how for its development and implementation.

9. TII does not mean a loosely organized instructional format. It does require careful organization and management in order to reach its maximum effectiveness. However, it has many inherent features that makes supervision easier than in the case in a typical classroom.

NOW, IT IS IMPORTANT TO DESCRIBE WHAT IS TRULY INDIVIDUALIZED INSTRUCTION:

1. TII, first of all, recognizes the fact that students are individuals possessing differing abilities and interests. Too long we have forced students into an administratively

convenient educational format..... a lock-step educational format. The so called Carnegie Unit plan locked educational procedure into a regressive practice that has stagnated effective learning for many, many years.....and still does!

Why not let the person who can complete a course in half the time it takes his fellow classmate to do it, do so? Surely, give him full credit. Then, too, the slower student may not have to be labeled a failure so quickly just because he needs more than a semester or a term to reach a particular educational goal.

2. TII implies that the student is in complete control of his instructional media. He is permitted and enabled to progress at the pace at which he is intellectually capable . . . . and learn effectively.

3. TII creates a new role for the teacher--more personal, not less. The teacher now can cope with individual problems as they arise..... in a personal and individual manner.

4. TII means releasing the teacher form much, much repetitious activity. The teacher can now "zero in" on special instructional needs. In fact, the teacher can become a manager of learning -- not primarily a dispenser of repetitious information.

5. TII implies the preparation of content narrative that will not possess the instructional loopholes so ofter present in repetitious teacher presentations. All the essential facts are there. . . everytime!

6. TII will make it possible for the better student to broaden his depth of the subject matter being studied or to move on to other content areas. Here is where the individualized relationship between teacher and student will enable meaningful educational planning for the student.

7. TII enables the less capable student to obtain individual assistance from the teacher without bringing the student to the attention of peers. On a one-to-one basis, the student and the teacher can become <u>specific</u> about the <u>specific</u> problem (s) involved.

8. TII makes possible meaningful individual goal planning for the student. An opportunity is provided to the teacher to encourage the individual student to set goals commensurate with his abilities. The alert teacher will be able to determine pretty well what the student is capable of doing by studying school records, observing work and classroom performance. Under the individualized format, the teacher has more opportunity to detect which students need to be challenged to work up to their capacity.

Herein lies a two-pronged motivating device: first the

teacher, on a one-to-one basis, can become specific in fitting a motivational device to a particular student; secondly, the very fact that students are working at their own rates, can foster a spirit of comparison/competition among students -- and make even more real the often talked about need to have students together in a typical classroom atmosphere in order to motivate them.

9. TII will place important and practical responsibilities on both the teacher and student . . . perhaps somewhat different from those now present in the typical classroom. The teacher will be challenged to be prepared to meet student differences on an individual basis; the student, encouraged and taught to assume a greater responsibility for his own learning.

10. TII does offer opportunities for meaningful group discussion at appropriate times . . . a decision that can be a joint teacher-student activity. For instance, if a teacher was handling 50 students in one class (Oh yes, this is not an unreasonable number -- it can be larger if the instructional area is large enough), and it was found that several of the students were experiencing the same type or types of difficulty in interpreting the recorded or printed instructions, those students could be taken to a seminar-type area for special attention. This means that the other students not experiencing the same difficulties would be enabled and permitted to continue to progress and not have to remain idle -- and perhaps very much bored -- while others' problems were being discussed.

11. TII implies the existence of carefully prepared narrative materials which have been thoroughly edited to assure the presence of all instructional and content information that would be thought desirable for the student. Let it be emphasized that the narrative be a "talking" narrative -- just as you as a teacher would talk to a student at your desk -- never for a class.

A person or persons possessing expertise in the content area, as well as in the psychology of learning, should prepare the narrative materials. In turn, the narrative materials are carefully recorded in timed segments on cassette-type tapes.

Even though the recorded narrative might be thought to be the best source of course content and instructor presentation available, it is not complete unto itself. It is strongly recommended that the student become <u>involved</u> in much more than the "listening" process. <u>We know that learning -- real learning -- increases in direct proportion to the student's involvement in the learning process.</u>

As the student listens to the recorded instruction (must be by headset if it is to be truly individualized), it has been demonstrated beyond doubt that his learning is greatly enhanced if he becomes involved in the interpretation of the recorded information. The interpretation can take the form

of notes written in a correlated student guide designed to serve a supportive role to the recordings. The recordings and printed guide, then, can comprise the components for an individualized instructional program which is unsophisticated, inexpensive, practical and innovative. Such a program will provide the following stimuli: 1) listening (audio), 2) writing (kinesthetic), 3) application of solving (cognitive or intellectual) and 4) final responding (further reinforcing).

12. TII, again, implies that the student is in complete control of the playback unit. The student can listen to as little or to as much of the recording as necessary. If the student needs extra time to complete notetaking, the student turns off the machine; if he/she wishes to relisten (once, twice, or more times) he or she simply rewinds the cassette to the desired position. In doing so, the student has not taken the time of an entire class as in "requesting" the teacher to repeat some point not understood. So often in the typical classroom, the student lacks the nerve to request a "rerun" by the teacher.

TII, although not advocated as the panacea for all educational ills, will permit and enable individual students to avoid many classroom unpleasantries resulting from differing abilities and interests -- which, no doubt, will be with us always.

13. TII, if carefully prepared, should reduce the need for much student questioning. Because those possessing the desired instructional expertise have prepared the instructional materials, there is a real reason to believe that the student will be exposed to a greater content "completeness" . . . . and many potential questions will never become questions, as they might have during a routine teacher presentation in the typical classroom.

In summary, Individualized Instruction has gained considerable support because it represents the most complete synthesis of what we have learned, over the centuries, about teaching and about learning. It has blended together, in a very systematic way, the best that we know - in behalf of teacher, student, and citizen-taxpayer.

Pragmatic teachers, the teacher disgnosticians, the educational managers, the educational engineers, the psychologists - those who have made Individualized Instruction work, in thousands of schools, remind us many times over that teaching is not telling; and that hearing is not learning.

We know now, without a doubt, that learning increases in direct proportion to the student's involvement in the learning process. If the student's experience is passive; if there is little or no involvement or participation or active effort, there will be little, if any, learning.

Involvement, participation, active effort - these are the key words, if learning is to take place; and for the most part, these must originate from and within the student - not without. This is really what Individualized Instruction is all about.

Truly Individualized Instruction incorporates the four elements of audio, visual, kinesthetic, and cognitive elements to form a "synergistic" learning system that blends together student involvement, participation, and active effort.

Individualized Instruction frees the teacher:

*to find out why the slow learner is slow - and seek to help him;

*to encourage the gifted student to explore new vistas;

*to see through and beyond the antics of the classroom discipline problem;

*to penetrate the introvert's shell and find out the reason for merely filling a seat, while refusing to participate in learning activities;

*to be ready to help the discouraged student, who may be coping with personal problems beyond the student's control.

It is equally important to remember that the success or failure of instruction, whatever its substance or format, is determined by the degree to which teachers perform their obligations in the classroom. No individualized instruction/learning program should make teachers mere "paper checkers" or "dispensers of hardware or software". Instead, teachers should be "managers of learning"; they should consistently be actively involved with students participating in an individualized setting.

II. METHODOLOGY AND THE CENTENNIAL MODEL

OVERVIEW

The Individualized Instruction concept that has been described in the first two parts of this Bulletin is producing enthusiastic results at Centennial High School, located in Gresham, Oregon.

Based on the content and recommendations presented in Oregon's Department of Education's Accounting Cluster Guide, Centennial has been designated as the state's Accounting Occupational Cluster Developmental Center, which is set up to assist administrators, teachers, and other school personnel in implementing career education curriculum and teaching innovations in high schools throughout Oregon.

In addition to the highly successful Individualized Instruction Model that has materialized at the Developmental Center, the accounting cluster program is divided into twelve areas - program planning, advisory committee, staff (administrative and instructional), facilities, equipment and instructional materials, curriculum, student evaluation and follow-up, guidance, counseling and placement, cooperative work experience, articulation, community resources, financing, and vocational student organization leadership training.

At the Centennial Demonstration Center, Individualized Instruction is a proven educational technique. Recently, a study matching achievement test results of accounting student's taking the same course by attending traditional lecture classes was conducted and results analyzed and revealed to educators. The study indicated that the individualized students, at the end of one school year, showed

better retention and comprehension results, surpassing "traditional" class students by more than four percentage points (on the average) per achievement test throughout the school year; and by answering questions on a special student survey sheet, students completing programs in the Individualized Instruction Model expressed overwhelming support of the individualized approach.

During the 1975-76 school year, there were more than 475 Centennial High School students and approximately 95 Mt. Hood Community College adult students making use of the Individualized Instruction approach at the Demonstration Center.

Because of the success of I.I. and in an effort to offer students additional educational programs, scheduling flexibility, and independent study facilities, the Centennial Model was expanded into a new Business Learning Center (a T.I.I. Model).

The Business Learning Center (or BLC) is organized to provide completely or truly individualized learning programs for students enrolled in Accounting 1-2, Accounting 3-4, Accounting Specialty Lab, Record Keeping, Business Communications, Personal Shorthand, and Personal Typing. Students enrolled in these courses may be scheduled for these programs in the BLC during any period of the school day. Students who are taking these individualized learning programs earn credit on a "variable" basis, which enables the courses to be divided into quarter units of credit - students earn credit for completing minimum required lessons, tests, and projects. Students who finish their course work early earn full credit for the program and may elect to move ahead with a second-year course or another program. Students who do not finish the required minimum assignments and tests receive less than the full unit of credit; however, the student can make up the assignments by attending evening sessions or completing work during the summer months.

The Business Learning Center is offering seven courses all at the same time, each period of the school day. There are 75 student stations and it also serves

as a business department resource center, a centralized student and teacher study center, including a comprehensive department library. Students often use the BLC as an open lab in which to complete class make-up assignments or for study purposes.

During each period of the school day, the BLC is staffed with at least one certificated business education teacher and one adult aide.[7]

SPECIFIC ELEMENTS THAT COMPRISE AN INDIVIDUALIZED INSTRUCTION LEARNING CENTER

There is an ever-increasing interest in the Centennial Model on the part of hundreds of school board members, administrators, and educators, representing small and large schools from throughout Oregon. Because of this interest and desire to provide an increasing number of programs on an I.I. basis, this section will discuss important elements (in specific detail) in an attempt to assist any school in implementing the I.I. concept into the high school curriculum. Special exhibits are referenced and they appear in the back of this Bulletin.

(a) Learning Center Concept. When implementing an Individualized Instruction program maximum use of space, equipment, faculty, aides, and student time can be made if the multiple course approach is used by the school. It is recommended that the school start with two or three separate subjects and gradually expand course offerings as teachers and administrators gain more experience in managing the program. The multiple course approach is the key feature, since this concept helps to service students on a flexible scheduling basis, provide courses for students that would be eliminated due to "low" enrollments, make better use of equipment, and reduce over-all costs to the school district. The Learning Center should be in operation during each period of the day.

(b) Role of the Teacher. The teacher now becomes even more important! The teacher now has time to watch, analyze, test, evaluate, diagnose, prescribe, inspire, and challenge, each and every student. The teacher is the manager of the Learning Center environment. Too many "individualized" programs fail because

the teacher gets bogged down with clerical duties, checking out and in software materials, and handling routine responsibilities. The teacher should devote virtually all of the time to working with students during the period. The success of a Learning Center will depend, to a large degree, on the teacher's use of "action" time. This means moving from one student to another, carefully monitoring each student's work and progress; the teacher should never take the opportunity to "leave" the room, sit away from the students, or assume a passive role. Student achievement will depend directly upon the teacher's participation in the learning environment and each student's personal involvement in the I.I. learning program.

(c) Facilities, Equipment, and Software. Adequate space should be made available to the Learning Center so that all students can be assigned a working station. Students should never be "clustered" around tables because of the lack of an adequate number of student desks. In order to truly individualize a Learning Center, each standard student desk should be equipped with one cassette playback unit (recorder/playback units are not required, nor are they recommended because of the danger of the student accidently recording on the pre-recorded tape), one set of headphones, a chain or "locking" instrument to "tie down" the cassette playback unit if it is desired by the school, approximately four rechargeable batteries for each cassette playback unit (if regular electrical current is not being used), a battery recharger, a cassette file cabinet in which to maintain the cassette inventory, and a four-drawer file cabinet in which to store student records. It is absolutely not necessary to invest in individual student carrels, which can represent a very sizable investment on the part of the school.

The software should consist of cassette tapes, student guides workbooks, tests, and other visual materials. Cassette instruction needs to be "geared" to the beginning learner - not for the person already familiar with the subject content. One very important step in the I.I./Learning process is that of the student being asked to take notes while listening; the student needs to be involved in the learning process. After all, isn't that "the name of the learning game": Get the student involved in the learning process! Plain listening is not the answer. (This does not mean, however, that the student should not be taught to be a "good listener".)

Cassette recording, then, should be geared to the uniformed or less informed learner. It is well for the teacher, who may be evaluating an I.I. program, to keep in mind the student who is beginning the study of a course or (subject) and the many needs the student has for time to take notes and assimulate the many types of information (facts, figures, examples, etc.), that are integral parts of the course content.

A teacher with considerable teaching classroom experience will remember how, at times, it is necessary to repeat, emphasizing certain important points and hesitate while notes are being taken,

remember to simplify and use vocabulary in line with the student's educational background.

Therefore, it is true that the cassette recordings need to be "in tune" with the beginning students. The teacher is then relieved of the routine dispensing of information, has time to challenge the superior student and provide supportive assistance to the "slower" student - thus creating a situation where the intellectual "highs" and "lows" do not find themselves openly competing on the educational 'field".

Correlated with each cassette recording is a student syllabus or guide, whereby students apply effective notetaking skills while listening and responding to the recorded lesson. The writing of notes prompts the student to select from the recorded narration the vital points to be used later in responding to questions and problems contained in the same student syllabus or guide. It is the "synergistic blending" (joint action in which the total effect is greater than the sum of effects, when acting independently) of the audio, visual, kinesthetic, and cognitive stimuli that brings about increased learning and retention. And it must be given to the student in an easily managed format, such as audio cassettes and a correlated student syllabus or guide.

If a software system is harder to use than not to use, it will be difficult to implement the program into an I.I./Learning process.

Each Learning Center should have an established inventory control system so that all equipment and software materials can be maintained without the incident of unnecessary loss. Hardware equipment should be labeled with appropriate inventory numbers and software material control should come under the direction of an aide, if at all possible. Furthermore, software materials should be made available for "check out" privileges, since there is always a demand by students who want to pursue their studies while away from the Learning Center.

A special testing area should be designated in the Learning Center. All testing should be administered under the responsibility of an aide or teacher. As soon as tests are completed by students, they should be graded and returned to the student immediately. When the student has reviewed the graded test, it should be filed in the appropriate student file for future reference. By assigning a special testing area, students then can be separated by their task, testing procedures are given added significance, and it becomes more manageable, on the teacher's part, to service all students in the Learning Center.

(d) Flexible Scheduling. The Learning Center concept enables a school, small or large, to offer individualized courses on an "open-entry, open-exit" basis. Students can begin courses at any time during the school year; when they complete all of the course requirements, students can then pursue second-year programs in the same course of study, change to a completely different course being offered in the Learning Center, or transfer to a different program elsewhere in the school.

When offering open-entry, open-exit courses in the Learning Center, the supervising teacher should work closely with the Counseling Department; moreover, the supervising teacher should be willing to accept all students interested in taking programs using the individualized approach.

Since the Learning Center has the advantage of providing a multiple number of courses and scheduling students on an open-entry, open-exit basis, it is recommended that the school keep the Learning Center operating throughout each period of the school day. See Exhibit A for an example of the Centennial Union High School District policy regarding student scheduling and completion of course options.[8]

(e) Learning Center Aides (Paraprofessionals). In the Learning Center, there are two basic types of aides: the adult aide and the student aide. The major reason for using an aide is to reduce clerical and remedial work of the supervising teacher. Aides enable the teacher to devote virtually all available time to servicing and monitoring students taking individualized courses. In fact, Learning Center aides should be used to increase the teaching effectiveness of the supervising teacher.

The adult aide is assigned certain responsibilities pertaining to clerical and inventory functions, administering tests, and maintaining student records. A complete "job description" of an adult aide is provided in Exhibit B (at the back of this Part). This description was written by the adult aide at the Centennial Model and it indicates the type of responsibilities and activities that can be assumed in a Learning Center.[9]

Student aides can work under the supervision of the adult aide. At the Centennial Model, student aides are granted credit for assisting in the Learning Center. To be selected, the student aide must petition the Counseling Department for approval and the Learning Center's supervising teacher must authorize the student's assignment. A complete "job description" of a student aide is provided in Exhibit C.[10]

Of course, the use of paraprofessionals will depend on the unique educational requirements and financial circumstances of each school. Cost analysis of paraprofessionals appears in Part III of this Bulletin.

(f) Student Guides. When a student enters into a course of study in the Learning Center, it is vital that he/she be given the proper directions for using the individualized procedure, the organization of the Learning Center, a course description, student procedures and rules, a complete list of behavioral objectives, and a complete listing of all assignments and tests that are to be completed in order to earn the appropriate credit and finish the designated course. It cannot be over-emphasized - the student should be provided with all Learning Center and course requirements before starting the individualized program. A copy of a student guide for first-year accounting, containing all of this information for the Centennial Model, appears as Exhibit D. (A separate student guide for each course offered in the Learning Center is available to students enrolled in

the various subjects.)

(g)Getting I.I. Started In the Learning Center - Days 1 to 5!

In order for teachers to implement Individualized Instruction/Learning properly into their instructional programs, it is important to recognize a requirement that is vital to success! An Individualized Instruction Program must be carefully planned and explained to all students, throughout the first week.

Getting students properly started on an Individualized Learning program is perhaps the single most important responsibility facing the I.I. Teacher! If the proper steps are not taken to introduce the benefits and procedures inherent in an Individualized Learning setting, the system's ultimate failure is almost guaranteed. Therefore, to avoid this fate, let's examine some of the more important do's and don'ts pertinent to the first week of introducing Individualized Learning/Instruction to students at all levels:

FIRST DAY: As you meet with your students on the opening day of the program, explain why all of them will be functioning in an Individualized Learning setting. In fact, devote most of the first meeting to this topic. Explain the many benefits open to students and elaborate, in great detail, about how the program has been coordinated on a "student-centered" basis-involving student scheduling (open-entry, open-exit), an individual learning pace, variable credit, the opportunity to check out materials for work on course assignments away from school, increased student-teacher contact, and systematic grading procedures. Also be sure to distribute individualized student assignment sheets and related materials during the first meeting. It is important to get the students actively involved with the Individualized Learning system (and its materials) at the first meeting.

SECOND DAY: Devote the entire time to reviewing proper use of the I.I. hardware Explain how to open and close cassette cases. Show students how to plug headphones into the cassette playback units and how to adjust the volume control on the playback machines. You also should explain the sanitary precautions relating to headphones and other electronic equipment available for daily use. Although this may sound rather "routine", sanitation factors having to do with headphones and cassette playback units are extremly important, because many students (and parents) do express concern about potential health hazards, when using such equipment. Take as much time as you need to explain the mechanical operation of the cassette playback unit. Demonstrate the proper insertion of a cassette tape, the use of headphones, the rewind and fast-forward features of the cassette playback unit, and the proper procedures for putting away the "hardware" at the completion of the class period. Remind students to bring their learning materials to the classroom for the next day's meeting. Explain that the third day is the ACTION day - the real beginning of Individualized Instruction.

THIRD DAY: This is the time to really get your students moving. However, before actually beginning the Individualized Program, explain the procedures for checking out cassettes, headphones, and cassette playback units. Be sure to review any student guides (or assignment sheets), and spend considerable time discussing the procedures for taking course examinations.

At this stage, it is vital to get all students started at the same time! Each student should have his or her own cassette, headphone, and cassette playback unit. Go through the steps relating to the use of hardware and software (learning materials) very carefully, before letting students begin their initial lesson.

Then, if there is time to spare, let your students start their cassette playback units together. Keep in mind, however, that this will be the only time all of the students will be doing the same thing at the same time, during the duration of the program. Be sure to circulate around the classroom as the students listen to their recorded lessons.

During this time, the teacher should make sure that all students are taking notes in their syllabuses, and are participating fully as the cassette playback units are in operation. Also, be sure to allow at least 4 or 5 minutes at the end of the period for students to put away all of their hardware and other learning materials.

FOURTH DAY: If possible, the teacher should spend no time in front of the classroom. Instead, the complete Individualized Learning operation should be functioning from the first minute of the period. The teacher should devote the entire class time to sitting down with students who need help; who want questions answered; who need guidance on how to more effectively use their student syllabuses.

At this point, the teacher will be primarily a "grammar" or "language" teacher. Very few high school students have adequate notetaking skills or language control. Therefore, it is especially important to help I.I. students with proper notetaking techniques, as well as questions relative to the subject matter itself. When the period is nearly over, stop the entire group of students and compliment them on how well they are doing. Always be ready to offer praise, whenever possible.

In an Individualized Learning program, the teacher should consistently work to build self-confidence in each student. If the teacher's attitude is positive, the students will immediately accept the individualized approach and thrive on its success.

FIFTH DAY: Now the Individualized Learning System is in full operation. The teacher should devote the entire time to

helping students; circulate around the classroom - never sit in a corner of the room, removed from your students! Make it a point to be working with individual students most (if not all) of each period. Be sure to observe their work and offer suggestions, whenever appropriate. If you are a part of the over-all learning "activity," your students will feel (and know) that you are there to help them. The Individualized Teacher is not a verbalizing or time-consuming obstacle to the student's learning progress. Instead, the teacher now becomes a "manager of the learning environment" and is present to really help each student learn what he/she is capable of learning. The key to success in implementing Individualized Learning Programs is to approach the first week of course work with a positive attitude! This factor will go a long way in determining the eventual outcomes and results of all Individualized Learning Programs. A positive attitude on the part of the teacher encourages students to seek the best from this new learning experience. A carefully planned and thoroughly explained Individualized Learning System, during the first week of operation, combined with positive teacher attitude . . . opens the way to full student acceptance of a truly innovative and productive educational concept.

(h) Grading System and Variable Credit. At the Centennial Model, students successfully completing the required lessons and tests for any individualized course earns credit on a "variable" basis. All of the courses are divided into quarter units of credit. No credit is granted for lessons completed that total less than a quarter's required assignments. Therefore, a student may earn 1/4, 1/2, 3/4, or a full unit of credit for a course taken in the Learning Center. If a student finishes a course early, a second-year course in the same subject or a different course can be pursued with additional credit granted if the required lessons and tests are completed by the student.

Grades for all Centennial Learning Center courses are awarded on the basis of A,B,C,D,F, or pass, no pass, or U. A "U" grade constitutes a "no grade" until required lessons and tests for the grading period are completed by the student. A "U" grade is not a failing grade. This credit and grading system was established after careful work had been done at the district administrative levels.

(i) Student Records. An Individualized Learning Center requires the maintenance of adequate student records. It is important to remember that because Individualized Instruction is not a common approach used by schools today, and because most schools still follow a "traditional" or "standard" time schedule for releasing grades to students and parents, it is imperative that Learning Centers consistently document student

performance as often as it is possible. At the Centennial Model, the following student records are kept:

(1) Individual Student File
(2) Student Information Card
(3) Student Progress Report
(4) Change of Grade Card
(5) Course Progress Report

The Student Information Card is filled out by the student on the first day in the Learning Center. This information relates to standard data relating to the student - name, address, telephone number, social security number, current class schedule, year in school, counselor's name, name of individualized course, date started and completed course, and space to record quarterly grades.

The Student Progress Report is sent home for parental review mid-way through each grading period. This form indicates the student's progress by lessons, test grades, and teacher's comments. Both the student and parents sign the document and return it to the Learning Center.

Change of Grade Card is used by the supervising teacher to report any changes of grades during each grading period. This form is normally used to change "U" grades to a letter grade for credit. The Change of Grade Card is completed by the supervising teacher and it is sent to the office for immediate action. Grade changes are usually made on the same day the Change of Grade Card is completed and sent to the appropriate person in the main office.

The Course Progress Report is a document used by the supervising teacher at the Centennial Learning Center to keep track of each student's daily progress. This report is carried around the Center by the supervising teacher, who uses it to document and "monitor" each student's progress and achievement.

All of these cards and reports are maintained in the student records file. The main goal is to design and use records that are simple; and to make each record as informative as possible.

(j) Teacher Load. The Centennial Learning Center serviced 640 students during the 1976-77 school year. The average "period load" was approximately 55 students. In reference to class size, a recent review of research published by the New England School Development Council concluded:

> "Research on the effects of class size on pupil achievement is contradictory and conclusive . . . class size may have no effect at all upon achievement. Much of the research upon class size finds that students in large classes achieve more than those in small classes."[12]

And according to the National Association of Elementary School

Principals, one study indicates only half the teachers with classes of 20 or fewer students actually took advantage of individualized instruction methods. The rest simply talked at the group the same as always. The conclusion: small classes don't always lead to individualized instruction, even if they create the opportunity.

Perhaps the best way to analyze the teacher load question is to be governed by the facilities that are available in which to operate a Learning Center. At the Centennial Model, it has been possible to service as many as 60-65 students at one time with the assistance of one supervising teacher and one adult aide. There appears to be no reason for a Learning Center not being able to handle 40-45 students at one time, given the same amount of staff personnel.

(k) Student/Classroom Problems. During the past four years, considerable experience has been gained from organizing and managing an individualized Learning Center at Centennial High School. Many student reactions and "situations" have been documented and analyzed at the Learning Center. The following represents a listing of potential "problem" situations that may be encountered by a teacher engaged in individualized instruction, followed by a comment that can help the teacher cope with these "typical" reactions:

STUDENT REACTION	TEACHER ANALYSIS OF REACTION
1 - Recorded lessons are so detailed that students complain that they are boring.	1 - Teacher should realize that the "number one" disadvantage of individualized instruction is that it requires the student to work!! Over a period of time students will realize that the cassette/student guide approach requires their active participation in the learning process. They cannot just "sit" in class and assume they have learned the lesson. After using some humor when discussing this "problem", most students admit that it is the work that is required that produces their response.
2 - Students don't like to listen to the same voice on the recorded lesson.	2 - A superficial argument! Most students have the same teacher for certain subjects for an entire year. However, many students will feel that several voices should be used when recording lessons on cassettes. Actually, changing voices may prove to be an even bigger distraction than continuing with the same narrator throughout a

	program. Remember, students are normally listening to recordings not more than two periods per week!
3 - Forgetting to bring learning materials to class.	3 - Device used to avoid work. Set down strict rules early, possibly affecting grades. Follow rules carefully and students will soon learn to adjust to Learning Center regulations.
4 - Students tend to ask questions and seek teacher help when taking tests.	4 - This is not always "bad". Remember, students will be receiving more help from the teacher while they complete daily assignments. This assistance will be expected as students attempt tests. Be sure to remind them of their own responsibility while taking tests before they attempt it.
5 - Students lack notetaking skills.	5 - This will be a prominent weakness early in the course. Spend considerable time helping students with language control procedures during the early stages of the program. At Centennial, this has been one of the most rewarding experiences of the Learning Center's supervising teacher. Keep encouraging students to work at the techniques of good notetaking.
6 - Students do not listen to tapes carefully enough.	6 - Require students to relisten to lessons. This will virtually eliminate careless work when listening to narrative. Do not spend your time repeating what is on the recording when you are certain that the student is attempting to <u>avoid</u> listening.
7 - Students do not follow directions	7 - Some students will try to answer questions while listening to tape, avoiding taking notes. Stop students immediately before a habit develops. Materials should require notetaking before written assignment is attempted by student.
8 - Students who do not take careful notes are the students most likely to demand most of the teacher's time.	8 - Require the student to relisten to the recording and to show notes at completion.

9 - Doing other class work during Learning Center time.	9 - It is easy to locate this problem by moving around the room. Set rules regarding this situation at the beginning of the school year.
10 - Students tend to expect immediate return of graded assignments.	10 - Immediate reinforcement is a realistic goal for individualized instruction. Attempt to provide students with reasonable time-line for returned lessons and tests. Establish rules in writing. The student will usually understand.
11 - Students sometime do not have enough time left in period to begin a new recording, creating some "idle" time.	11 - Require student to use time. Listening to the first few minutes of the next lesson is productive and these expectations of the students should be consistently told to all students. If this continues to be a problem, students should be required to use time reviewing student guide material. However, most students will agree to move ahead with the next recording.
12 - Students comment, "My ears hurt!"	12 - Ask student to try a different headphone. Mostly, this is an excuse to avoid work. However, the teacher should be familiar with any physical problems of students!
13 - Temptation to talk toother students.	13 - Peer tutoring is very helpful. However, there will be more opportunities for student conversation. The best way to cope with this situation is to follow rigid seating chart, and demonstrate teacher's determination to separate those students who take advantage of arrangement. It is recommended that students should not be "clustered" around tables. Each student should be assigned to own desk. Students do tend to sit next to friends.
14 - More opportunities to want to leave the room.	14 - Stick to Learning Center rules! Since it is not a lecture control situation, students will test teacher's sincerity regarding special privileges.
15 - Music Tapes.	15 - This is an easy problem to solve. Set penalties and observe them. Collecting music tapes and then returning them to student only after the student promises not to bring them again seems to take care of most situations of this type.

16 - Student state - "We have to flip too many pages in the syllabus and tests."

16 - Same problem exists with standard textbooks, workbooks, and tests. Remind students about this reality or give them another copy for reference.

III. COST ANALYSIS OF INDIVIDUALIZED INSTRUCTION

As mentioned in the introduction of this Bulletin, an extensive cost analysis of the Centennial Learning Center's individualized accounting program was conducted by Fred C. Manasse, a nationally recognized educational engineer. The individualized cost analysis was made during the 1975-76 school year as part of an overall business education department "Program Effectiveness Study". The following information describes the content of Mr. Manasse's Program Effectiveness Summary, including a statement of future recommendations. This program effectiveness summary clearly indicates the potential cost-savings that can be realized by implementing an individualized Learning Center with multiple course offerings: (Taken from from Fred Manasse's report to Oregon Department of Education)[13]

The Program Performance Summary Instrument

A. Purpose:

The program Performance Summary is an assessment and planning instrument designed to provide concise, approximate management information related to the effectiveness of educational programs.

B. Structure:

The Program Performance Summary consists of three parts:

(1) Headings

(2) Effectiveness data (quantified). Lines 1-34

(3) Narrative description of key opportunities for improvement

C. Headings:

The headings identify:

(1) The program

(2) The year of the "current" column

(3) The level of education

(4) The department

D. Parameters of Effectiveness:

(1) Expense (Lines 1-11):

The expense classification covers all instructional expense applicable to the program under consideration. The classification is in accordance with the new Accounting and Budgeting System for the state of Oregon.

(2) Enrollment (Lines 12-13):

The enrollment is shown as headcount on line 12 and as full-time equivalent students on line 13.

(3) Cost:

The instructional cost per full-time equivalent student.

(4) Achievement:

Ideally the achievement should be based on clearly defined competencies and criterion-referenced tests. In most programs, these evaluation measures are being developed. In the absence of clear objectives, the best available test instruments have been used. Grade point averages are only admissible in cases in which they are closely correlated to competencies.

(5) Attrition:

The percentage of students who drop out or fail in a given year. On the primary level, attrition has been replaced with mobility: the percentage of students in sixth grade who started school in the same district.

(6) Personal Attention:

The average student-adult ration in the classroom.

(7) Interest Level:

The degree to which instruction is interesting in the eyes of the students, based on a survey.

(3) Program Improvement Date:

These columns should be filled in by the district and contain attainable goals for two subsequent years based on a Program Improvement Plan and taking into consideration existing conditions and prevailing prices and salaries but trending definitely in the direction of the improved model.

F. Narrative "Major Challenges":

The narrative contains a number of expository comments regarding the effectiveness of the program under consideration and some steps leading towards improvement.

G. General:

The Program Performance Summary is designed for specific programs reflecting local conditions. It is generally not recommended for comparison of similar programs in different districts. If used in this manner, it should be done with great care.

The most important use of the summary would be derived by comparing the effectivensss of the same program over a number of years.

The summary is also designed in an impersonal manner; it should not be used for teacher evaluation.

If the Program Performance Summary is used in a correct and constructive manner, it has been proven as a valuable tool for teachers, administrators, students, and the public.

PROGRAM PERFORMANCE SUMMARY

PROGRAM: Accounting
LEVEL: Secondary
BASE YEAR: 1975-76

LINE	PARAMETERS CLASS	ITEMS	CURRENT MODEL	IMPROVED MODEL PRACTICAL	IMPROVED MODEL IDEAL	PROGRAM IMPROVEMENT DATA YEAR: 1975-76 PLAN	YEAR: 1975-76 ACTUAL	YEAR: PLAN	YEAR: ACTUAL
1	EXPENSE	SALARIES TEACHERS,	11,350	13,600	16,400				
2		AIDES	2,700	3,500	3,500				
3		CLASSR. SAL.	14,050	17,100	19,900				
4		INSTR. SUPP.	3,320	3,320	3,320				
5		INSTR. ADMIN.	1,620	1,620	1,620				
6		TOTAL SALARIES	18,990	21,040	24,840				
7		EMPL. BENEFITS	2,850	3,180	3,740				
9		MAT. & SUPPLIES	3,180	3,180	3,180				
9		OTHER EXPENDIT.							
10		INCOME							
11		TOT. INSTR. EXPEN.	25,020	27,400	31,760				
12	ENROLLMENT	HEADCOUNT	250	300	300				
13		A.D.M. STUDENTS	42	50	50				
14	COST	INSTR. COST/ADM	600	550	635				
			SCORE / PTS.	SCORE / PTS.	SCORE / PTS.	SCORE / PTS.	SCORE / PTS.	SCORE / PTS.	SCORE / PTS.
15	ACHIEVEMENT	Percent of students reaching objectives							
16									
17									
18		COMPOSITE	88% 110	80% 100	80% 100				
19	ATTRITION	Percent of students who drop out or fail							
20									
21									
22		COMPOSITE	13% 100	13% 100	13% 100				
23	PERS. ATTENTION	Student/adult ratio in classroom							
24									
25									
26		COMPOSITE	25:1 100	25:1 100	25:1 100				
27	INTEREST LEVEL	Students with positive responses-survey							
28									
29									
30		COMPOSITE		50% 100	50% 100				
31	RELEVANCE	Relevance rating on scale 1-5							
32									
33									
34		COMPOSITE		4.0 100	4.0 100				

MAJOR CHALLENGES: The accounting model under study is the best in the state; exceptional in terms of quality as well as cost. The only recommended improvement is to utilize the lab six periods per day instead of five; ideally the teacher should be promoted to the rank of master teacher with special recognition and incentive pay based on the excellent performance including cost which is 33% below state average cost.

In studying the dollar cost (or savings) of a completely individualized program, let's analyze it from a different approach: (Author's own cost analysis)

1. THINGS TO KEEP IN MIND ABOUT SCHOOL COSTS:

   A. 70% to 80% of the average school budget goes for "cost of instruction" --in other words, TEACHER cost!

   B. Only .7 to 1.5% is expended in instructional materials.

2. THE AVERAGE PER-STATION COST FOR INDIVIDUALIZED INSTRUCTION (UTILIZING GOOD, STANDARD, NONLUXURY EQUIPMENT) IS:

   A. Cassette playback unit $30.00

   B. Playback adaptor (AC to DC) 6.00

   C. Headphones 10.00

   Total cost per station per year $46.00

   D. Cost (per year) of station installation amortized over a 5 year period ($46.00 + 5) 9.20

   E. If the station is used more than one period each day, the student/station cost factor should be arrived at by dividing the amortized cost (above) by the total number of periods the station is used (for example - 5 periods: $9.20 + 5). Cost of station per year. . . . . $ 1.84

3. AVERAGE COST OF INDIVIDUALIZED INSTRUCTION SOFTWARE:

   A. Average I.I. Program (9 cassettes x $12.85) . . .$115.65

   B. Original Program cost amortized over a 5 year period . . . . . $ 23.13

   C. Extra prints of program recordings - thus making Individualized Instruction available to a varying number of students simultaneously: (for example: 54 extra cassettes x $4.95) $267.30

   D. Extra prints (above) amortized over a 5 year period . . . . . $ 53.46

   E. If the program is used more than one period a day, the "prorated" cost factor should be arrived at by dividing the amortized cost of the program ($23.13), plus the amortized cost of the extra prints ($53.46), by the total number of periods the program is used each day. (For example: $23.13 + $53.46 = $76.59 + 5 = Cost per year) . . . . . $ 15.31

F. The prorated program cost factor noted in paragraph "E" ($15.31) could be further adjusted by introducing the average number of students using the recordings each day. (For example: $15.31 + 200 = Software cost per year, per student). . . . . ($ 0.077)

G. Average cost for Correlated Guide, Syllabus, or Worktext . . . . . ($ 5.16)

4. COST OF INSTRUCTION UTILIZING LECTURE METHOD.

A. Average teacher salary in the U.S.($12,000) divided by the average number of students served each day (105), gives us a per-student-per-year instruction cost of $114.29

B. However, using the lecture method, only one subject is being taught at a time.

5. COST OF INSTRUCTION UTILIZING INDIVIDUALIZED INSTRUCTION:

A. Average teacher salary in the U.S. ($12,000) divided by the average number if I.I. students served each day (with individual attention), results in an I.I. per-student-per year instruction cost of - $12,000 + 200 (I.I. teacher capability without the assistance of an aide) . . . . . $ 60.00

B. A single I.I. teacher can service three or more subjects simultaneously, which prorated, would further reduce the per-student-per-year instruction cost to - $60.00 + 3 subjects . . . $ 20.00
Whereas the lecture method would require three teachers or three separate time periods.

6. SUMMATION OF COST FACTORS AND COMPARISON OF LECTURE METHOD FORMAT AND INDIVIDUALIZED INSTRUCTION:

A. Per-student-per-year cost of instruction with lecture method $114.29

B. Per-student-per-year cost of instruction with Individualized Instruction:

1. Per-station cost per year, utilizing each station 5 periods a day . . . . . $ 1.84

2. Program cost per year, utilizing Program 5 periods a day, including cost of "extra" prints - but not the 200-students-per-day capability that this would offer . . . . . $ 15.31

3. I.I. teacher cost, when servicing three subjects . . . . . $ 20.00
$ 37.15

4. Per-student-per-year cost of instruction with I.I. $37.15

C. Per-student-per-year savings, with I.I. $77.14

D. The savings of $77.14 x 200 students = $15,428 with I.I. is very significant, but no more significant than the improved retention/comprehension factor, the opportunity to learn at one's own rate, and the open entry/open exit capability.

This cost or savings estimation does not take into consideration wages and additional payroll expenses of any adult aides. These costs would need to be included in the total cost figures in order to arrive at a projected total savings. However, the above estimation does indicate that individualized instruction doesn't cost a school district - it pays!

When many school administrators and educators visit the Centennial Learning Center, many want to know what the initial cost is for establishing their own individualized Learning Center program. The following information relates to the initial cost of setting up one course and equipping an "average-sized" Learning Center: (assuming 30 student stations)

PROJECTED INITIAL ESTIMATE

Cassette Playback Units ($23.00 each)	$ 690.00
Headphones ($10.00 each)	300.00
Miscellaneous Equipment (file, batteries, etc.)	200.00
Cassette Tapes ($3.25 each) multiple quantity	2,291.25
Student Syllabus, 30 copies of Parts I, II	720.00
Total Initial Cost.	$4,201.25

Of course, the cost of the playback units, headphones, miscellaneous equipment, and cassette tapes should be charged over at least a five-year period of time. This would mean that the per student cost for a period of five years, excluding the cost of the student syllabus, would be approximately $23.00!

In too many cases, we often attempt to analyze the cost of an individualized program against a "traditional class" by comparing costs of Learning Materials. Actually, the real savings to a school district is effected by offering multiple courses in the Learning Center and servicing an increased number of students at the same time. Very little dollar cost savings can be realized without this combination of results!

Three major questions must be answered positively by a school district analyzing these cost factors: (a) Is it worthwhile and productive to offer individualized learning programs? (b) Are we willing to offer a multiple of different courses? (c) Are the administration and interested teachers willing to service an increasing (but reasonable) number of students in the Learning Center?

The Manasse Report, the estimation of Learning Center costs, and the projected cost estimation for an initial investment in a Learning Center clearly indicate that the quality of instruction and teacher productivity can be realized at the same time cost benefits are being derived by the school district and the public taxpayer.

IV. APPLICATION OF INDIVIDUALIZED INSTRUCTION TO OTHER ACADEMIC AREAS

The concept of the individualized Learning Center described in this Bulletin can be applied to virtually all academic areas in a public school curriculum. Of course, the concept can be applied more easily in some areas than others; but, nevertheless, individualized instruction still has an application potential to all subjects, whether it be home economics, social studies, English, mathematics, science, business education, art, industrial education, foreign language, or physical education. In fact, there are completely individualized learning

program materials available in each one of these subject areas - with even greater potential for more new programs in the future.

Many vocational-technical schools, community colleges, and four-year colleges and universities are redesigning their library facilities to accommodate new "media centers" - all with the goal of maximizing individualized learning opportunities for students. Elementary schools have attempted to individualize learning in actual classroom situations for several years, using technology and carefully prepared materials. Now, there are many high schools actively engaged in implementing the individualized concept, mostly in career-oriented courses.

The limits of individualized instruction stops with the imagination and professional motivation of educators themselves. The application of individualized instruction is common to all academic areas; the special needs and unique coverage of each subject (and their variations) become a major challenge to those educators who really strive to individualize the learning options of their students.

Perhaps there is every reason to expect every department in a "typical" high school to have its own Learning Center. The degree of application to individualized instruction and the number and types of courses being offered in each Learning Center would be the only difference in the application of the concept.

V. CONCLUSIONS AND RECOMMENDATIONS

Based on extensive research, preparation of learning materials, and practical teaching experience, the following conclusions can be assumed relating to the applications of individualized instruction in the public schools:

(a) improvement in the quality of instruction, increased teacher productivity, and cost savings can be realized with effective individualized learning programs;

(b) improved student achievement results can occur if individualized instruction is implemented and managed properly;

(c) students are able to experience greater flexibility in scheduling of courses and they will have a broader selection of programs from which to choose;

(d) small high schools can offer a more comprehensive curriculum to all students, with better utilization of staff resources;

(e) individualized instruction offers schools a unique advantage in moving toward competency-based instruction;

(f) the application of individualized instruction should incorporate audio, visual, kinesthetic, and cognitive stimuli;

(g) teachers must be willing to change their "role" in the learning environment in order to implement effective individualized learning programs.

(h) cost effectiveness is a concept to be accepted and applied by all schools and educators;

(i) there is a serious lack of direction in defining, implementing, and managing effective individualized learning programs;

(j) changes in standard student progress reporting, including grades, need to be made to allow for a smoother transition to the individualized learning concept and competency-based instruction;

(k) cost comparisons between "traditional lecture" courses and individualized learning programs should be based on <u>total</u> expenditures made for personnel, equipment, teacher productivity, and materials - not just software materials alone.

RECOMMENDATIONS

The following short-term and long-term recommendations relating to individualized instruction are suggested as guidelines for possible future action:

(a) an extensive effort should be made by teacher education institutions (with cooperation from the Oregon Department of Education) to offer graduate workshops devoted solely to preparing teachers for implementing pragmatic individualized learning programs in Oregon's schools;

(b) increasing emphasis should be placed on Cost Effectiveness Programs, fostering closer working cooperation between school districts, educators, and public taxpayers;

(c) investigate possibilities of remunerating teachers who accomplish increased productivity in both student learning and dollar cost savings to school districts;

(d) school boards need to mandate implementation of individualized learning programs, giving definite time-line schedules;

(e) small schools should be the leaders to adopt individualized instruction, since a more comprehensive curriculum is obtainable by using existing resources;

(f) additional "Demonstration Model Schools" should be established in an effort to show how the individualized Learning Center concept can be applied to <u>all</u> academic areas;

(g) school districts should encourage the dissemination and implementation of research findings among all levels of personnel staff;

(h) teachers should be more concerned about managing a Learning Center rather than being expected to develop, experiment, and implement software materials within a short period of time;

(i) although the "traditional lecture approach" has not been required to "prove itself from a pedagogical standpoint," the individualized learning concept should experience more research and pragmatic applications in order to truly measure its educational benefits and efficiency;

(j) improvement in communicating the benefits of individualized instruction among all levels of education and the general public should be carried out on a consistent basis.

It has been the goal of this writer to present a comprehensive overview of individualized instruction, with a major emphasis being focused on its pragmatic applications. A brief summary of the increasing need for the individualized concept, a detailed presentation of the proper definition of individualized instruction, its applications to all academic areas, and some general conclusions and suggestions for future action were all objectives of this writer.

Since hundreds of educators have asked for assistance in implementing individualized learning programs during the past two years, it is the sincere hope of the writer that Part II will offer some pragmatic suggestions for those interested in individualized learning classroom methodology.

EXHIBIT A

To: Principals and Department Chairman

From: Tros Werth

Re: Individualized Instruction Credit

The following policy is effective immediately:

1. If a student completes an individualized course of study prior to the normal allocated time, the student will be given the appropriate credit and have the following options:

   a) take as much work as possible of a second year program in the same subject area just completed

   b) if at a term or semester break, transfer to a nine-week or semester course (this could include student aide)

   Teachers may not transfer students out of their classes at any times other than 9 week or semester breaks. Also note that study hall is not an option.

2. If a student fails to complete an individualized course of study in the normal allocated time he may be given the following opations if it is a required course (an elective course may be dropped):

   a) be reassigned to the class

   b) work on a contract basis before or after school

   c) attend summer school

   Teachers must provide the office with a complete list of students who do not complete the courses and identify the last package completed. This must be done prior to teachers' check-out time at the end of the school year.

   INDIVIDUALIZED LEARNING PROGRAMS COVERED BY THIS POLICY MUST BE APPROVED BY THE DISTRICT CURRICULUM DIRECTOR IN ORDER TO ESTABLISH COMMON PROFICIENCY REQUIREMENTS.

EXHIBIT B

JOB DESCRIPTION

BUSINESS LEARNING CENTER AIDE

SPECIFIC DUTIES:

TO SET UP ALL RECORDS FOR THE CLASS

1. Have all students fill out new student cards.

2. File student cards by period alphabetically.

3. Make out work sheets for each class and period to be used by the teacher and to record test grades.

   A. Recordkeeping
   B. Accounting 1-2
   C. Accounting 3-4
   D. Accounting Specialty Lab
   E. Business Communication
   F. Personal Shorthand
   G. Personal Typing

4. Type info sheet for each period with class and student on it.

5. Make files for each student for every period.

DAILY DUTIES:

1. Assist and supervise students in Business Learning Center under the direction of the instructor:

   A. Hand out tests
   B. Hand out tapes
   C. Check out earphones
   D. Correct tests and record grade on work sheet

2. Maintain student information file cards.

   A. Changing of classes
   B. Dropping of class
   C. Address change

3. Maintain student file (filing daily work and test)

GENERAL DUTIES:

1. Do teacher typing and general secretarial work for the Business Learning Center.

2. Operate the following:
   A. Cassette Playback machine
   B. Thermofax
   C. Gestefax
   D Mimeograph

3. Supervise, train and evaluate student aide.

4. Assist in maintaining appearance and general operation of the Business Learning Center as directed by Business Department Chairman and Supervising instructor.

5. Record Quarter grades on student information cards.

6. Assist proper completion of student progress form.

7. Maintain an inventory control system for cassette recordings, cassette playback units, and all books.

EXHIBIT C

JOB DESCRIPTION

BUSINESS LEARNING CENTER STUDENT ASSISTANT

1. Serve as the receptionist for the Business Learning Center.

   A. greet visitors and students
   B. answer telephone
   C. assist adult aide

2. Serve as secretary to Business Department Chairman, supervising Business Learning Center teacher, and Business Learning Center adult aide.

   A. filing
   B. typing
   C. dictation
   D. operate following machines -

      transcriber, themofax, Gestefax, Mimeograph, typewriter, ten-key adding machine

3. Under the direction of Business Learning teacher and adult aide, maintain appearance in Business Learning Center.

4. Maintain guest log of individuals visiting Business Learning Center.

5. Maintain student log of students using Business Learning Center for additional or remedial work.

EXHIBIT D

Student Guide for Individualized Learning

ACCOUNTING 1-2

BUSINESS LEARNING CENTER

Centennial High School

Gresham, Oregon 97030

1977-78

BUSINESS LEARNING CENTER

Prerequisite: Teacher or Counselor approval

- * Accounting 1-2
- * Accounting 3-4
- * Accounting Specialty Lab
- * Business Communications
- * Recordkeeping
- * Personal Shorthand

The Business Learning Center is organized to provide complete individualized learning programs for students enrolled in Accounting 1-2, Accounting 3-4, Accounting Specialty Lab, Business Communications, Personal Shorthand, and Recordkeeping. Students enrolled in these courses may be scheduled for these programs in the Business Learning Center during any period of the school day. Students who are taking these individualized learning programs earn credit on a "variable" basis; these courses are divided into quarter units of credit. Students may begin their course work at any time during the school year.

Students who are interested in enrolling for semester courses in Personal Shorthand and have class conflicts in being scheduled for the regular class period, may take this program on an individualized basis in the Business Learning Center. Students may be scheduled for this course during any period of the school day, as well as beginning the course work at any time during the school year. Students who are taking Personal Shorthand in the Business Learning Center earn credit on a quarter basis, and evaluation of student course work is based on minimum competencies as established in the regular Personal Shorthand classes.

The Business Learning Center is organized to serve as a Business Department Resource Center and a centralized Teacher and Student Study Center, including a comprehensive Business Education and Personal Finance library.

Students may use the Business Learning Center as an open lab in which to complete class make-up assignments or for study purposes.

COURSE DESCRIPTION

612 Accounting 1-2 (Year) Open to Grades 11 and 12.

Prerequisite: Average ability in math is desired.

This course features an individualized learning program designed to meet the needs of every student. It includes the complete fundamental accounting cycle, special systems for recording accounting transactions, special accounting topics related to all types of business, including an emphasis upon merchandising business organizations. The major objective of this course is to prepare the student for job entry positions and provides practical sets, where actual journals and business transactions are simulated for effective student learning. This course is highly recommended as a general education course as well as an excellent program for those interested in pursuing accounting for occupational purposes or to continue accounting training at a community college or university. A ½ unit of credit is granted for completion of minimum course requirements every nine weeks.

BUSINESS LEARNING CENTER
STUDENT PROCEDURES AND RULES

ATTENDANCE: The school's 10/20 day policy will be enforced in the Business Learning Center. All students enrolled are subject to regular 9-week course attendance regulations. It is the responsibility of each student to keep currently informed of attendance status. Attendance each period will be taken from assigned seating locations.

TARDY POLICY: The Business Learning Center operates under the school's 3/4 tardy rules. Each student tardy to class for the third time during any nine-week grading period will be issued a written warning. When a student is tardy for the fourth time during any nine-week grading period, a written referral will be made to the Assistant Principal.

ASSIGNMENTS: Students are responsible for completing their required course assignments. These required assignments are listed on the last page of this student guide. Students are expected to complete these assignments at their own learning pace; however, make note of the number of lessons needed to be successfully completed in order to earn credit!

CARE AND USE OF EQUIPMENT: Properly operating equipment means good service to you! Students are expected to handle all equipment in the Business Learning Center with normal care. If you encounter some equipment not functioning properly, please report it to the BLC teacher or aide.

MATERIALS CHECK-OUT: All materials should be checked out through the BLC aide. The check-out location is the back part of room 46.

CREDIT: Students successfully completing required assignments will earn credit on a "variable" basis. These courses are divided into quarter units of credit. It is important to note that for those courses being offered on "a quarter unit, variable" basis, no credit is granted for lessons completed that total less than a quarter's required assignments.

GRADES: Grades for all BLC programs (courses) are awarded on the basis of A, B,C, D, F, or pass or no pass, or U. A "U" grade constitutes a "no grade" until required lessons for grading period are completed by student. The "U" grade is not a failing grade. The deadline for requesting Pass-No Pass courses is the second Friday of each semester.

HALL PASSES: Hall passes will be issued by the BLC teacher only on an emergency basis.

HOURS: The Business Learning Center will be open 30 minutes prior to the start of school each morning, periods 1,2,3,4,5,6, and 30 minutes after school in the afternoon.

TESTS: Please check out tests from aide in room 48. Use the testing area in room 48 to complete test. Your completed test will be graded by the aide as quickly as possible.

TEACHER ASSISTANCE: Ask for help whenever you need it! Your progress depends on how well you understand each lesson. The teacher is in the BLC to help you!

AS A RESULT OF COMPLETING THIS INDIVIDUALIZED LEARNING PROGRAM, YOU SHOULD BE ABLE TO:

1. Define basic vocabulary terms relating to accounting.
2. Use accounts to analyze transactions and to determine debits and credits.
3. Journalize transactions in a general journal and all specialized journals.
4. Post transactions from all journals to the general ledger and subsidiary ledgers for accounts receivable and accounts payable.
5. Maintain a general ledger and subsidiary ledgers for accounts receivable and accounts payable.
6. Prepare a worksheet.
7. Prepare financial statements.
8. Journalize and post adjusting and closing entries.
9. Maintain a checkbook.
10. Reconcile bank statements.
11. Maintain records of a petty cash fund.
12. Maintain merchandise inventory records.
13. Process purchase invoices.
14. Process sales invoices.
15. Process returns and allowances.
16. Maintain records of cash payments.
17. Maintain records of cash receipts.
18. Process cash register transactions.
19. Prepare a cash proof.
20. Maintain payroll records
21. Keep a full set of books for a service-type business.
22. Keep a full set of books for merchandising-type business.

REQUIRED LESSON ASSIGNMENTS

Centennial High School
3505 SE 182
Gresham, Oregon 97030

Individualized Learning program (Business Learning Center) course: accounting 1-2

COURSE ASSIGNMENTS: Student syllabus, tests, and practice sets.

COURSE PROGRESS:

Lesson 1 _____
Lesson 2 _____
Lesson 3 _____
Test #1 _____
Lesson 4 _____
Lesson 5 _____
Lesson 6 _____
Test #2 _____
Lesson 7 _____
Lesson 8 _____
Lesson 9 _____
Lesson 10 _____
Test #3 _____
Lesson 11 _____
Lesson 12 _____
Lesson 13 _____
Test #4 _____
(½ Credit earned 9-WEEK GOAL
****
Lesson 14 _____
Lesson 15 _____
Test #5 _____
Lesson 16 _____
Lesson 17 _____
Lesson 18 _____
Test #6
Lesson 19 _____
Lesson 20 _____
Lesson 21 _____
Lesson 22 _____
Test #7 _____
Lesson 23 _____
Lesson 24 _____
Test #8 _____
Practice set Completed ___
(½ Credit earned) FIRST SEMESTER GOAL
****
Lesson 25 _____
Lesson 26 _____
Lesson 27 _____
Test #9 _____
Lesson 28 _____
Lesson 29 _____
Test #10 _____
Lesson 30 _____
Lesson 31 _____
Test #11 _____
Lesson 32 _____
Lesson 33 _____
Test #12 _____
Lesson 34 _____
Lesson 35 _____
Test #13 _____
Lesson 36 _____
Lesson 37 _____
Lesson 38 _____
Test #14 _____
Lesson 39 _____
Lesson 40 _____
(½ Credit earned)
Test #15 _____
9-WEEK
****
Lesson 41 _____
Lesson 42 _____
Lesson 43 _____
Test #16 _____
Lesson 44 _____
Lesson 45 _____
Test #17 _____
Lesson 46 _____
Lesson 47 _____
Test #18 _____
Lesson 48 _____
Lesson 49 _____
Test #19 _____
Lesson 50 _____
Lesson 51 _____
Test #20 _____
Lesson 52 _____
Lesson 53 _____
Lesson 54 _____
Test #21 _____
Practice Set completed
(½ Credit earned) _____
FIRST YEAR GOAL
****

REFERENCE BIBLIOGRAPHY

1. Bloom, Benjamin S., Hastings, Thomas V., and Madaus, George F., Handbook on Formative and Summative Evaluation of Student Learning, McGraw-Hill Book Company, New York, 1971, p 43.

2. Drucker, Peter F., The Age of Discontinuity, Harper and Row, Publishers, New York, New York, 1969.

3. Manasse, Fred C., Program Effectiveness Summary Report, Oregon Department of Education, July, 1976.

4. Education U.S.A., National School Public Relations Association, Washington, D.C., February 2, 1976, Vol. 18, No. 23, Page 131.

5. Western Business Education Association, How to Design Business Education Systems for Individualized Instruction, published speech presentation, March, 1972

6. McKenna, F. Raymond, Piaget's Complaint--and Mine: Why Is There No Science Of Education?, Phi Delta Kappa, New York, New York, February 1976, pp. 405-409

7. Accounting Cluster Developmental Center Newsletter, Centennial High School, Gresham, Oregon, May, 1976.

8. Gresham Union High School District Policy Statement: Individualized Instruction Credit, Gresham, Oregon, December 29, 1972.

9. Olsen, Deonne, Aide Job Description, Centennial High School, Gresham, Oregon, June, 1976.

10. Doan, Alton and Hempel, Marvin W., Student Aide Job Description, Centennial High School, Gresham, Oregon, August, 1975.

11. Doan, Alton, and Hempel, Marvin W., Student Guide for Individualized Learning, Business Learning Center, Centennial High School, Gresham, Oregon, August, 1975.

12. Ricklefs, Roger, "Crowding the Classrooms", The Wall Street Journal, Dow Jones Company, New York, New York, September 12, 1975.

13. Patterson, Rod, "An Engineer Looks at Education and Finds the Clutch is Slipping", The Oregonian, Portland, Oregon, February 25, 1974, p. 19